

REMARKS

The foregoing amendment is to impart greater clarity and definiteness to the claims rather than to avoid prior art.

Applicants respectfully request reconsideration of this application as amended. Claims 1-51 are pending in the application. Claims 1-38 and 42-51 are rejected. Claims 39-41 are allowed. Claims 6, 8, 17, 20, 31, 33, 37, 38, 42, 43, 48 and 51 are amended.

Rejections under 35 U.S.C. 102

Claims 1-14, 44-46 and 50 are rejected under 35 U.S.C. 102(e), as allegedly being anticipated by Figure 5 of US Patent 6,816,961 (Rice). Applicant respectfully disagrees.

Claim 1, for example, sets forth:

1. (Original) A method comprising:
 - shuffling first set of packed data from a first source based on a first set of masks to produce a first set of shuffled data, said first set of masks to include a first plurality of control entries, wherein at least one of said first plurality of control entries is to set a first data element position in said first set of shuffled data to zero;
 - shuffling second packed data from a second source based on a second set of masks to produce a second set of shuffled data, said second set of masks include a second plurality of control entries, wherein at least one of said second plurality of control entries is to set a second data element position in said second set of shuffled data to zero, wherein said second data element position is different than said first data element position; and
 - merging said first set of shuffled data and said second set of shuffled data together to form a packed data resultant.

Applicant respectfully submits that Figure 5 of Rice and the corresponding disclosure in col. 6, line 62, through col. 7, line 32, does not disclose or suggest a set of masks to include a plurality of control entries, wherein at least one of said first plurality of control entries is to set a data element position in a set of shuffled data to zero as is set forth by Claim 1 of the present application.

Claim 11, for example, sets forth:

11. (Original) A method for rearranging data comprising:
 - loading first data for a first plane and second data for a second plane;
 - loading a first control mask having a first shuffle pattern and a second control mask having a second shuffle pattern;
 - selecting one of said control masks to operate on said first plane data and another of said control masks to operate on said second plane data, wherein said one control mask is different from said another control mask;
 - shuffling a first portion of said first plane data in accordance with said one control mask to generate a first set of shuffle data and a second portion of said second plane data in accordance with said another control mask to generate a second set of shuffled data; and
 - merging said first set of shuffled data together with said second set of shuffled data to form a packed data resultant having data from both said first plane and said second plane.

Figure 5 of Rice and the corresponding disclosure in col. 6, line 62, through col. 7, line 32, does not disclose or suggest selecting one control mask to operate on a first plane data and another to operate on a second plane data and shuffling a portion of each respective plane data in accordance with the control masks to generate respective sets of shuffle data, as is set forth by Claim 11 of the present application.

Applicant respectfully submits that that in order for a rejection based on anticipation to be made, the identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Accordingly, Applicant respectfully submits that the claims in the present application are not anticipated by Figure 5 of Rice as indicated by the Office Action.

Rejections under 35 U.S.C. 101

Claims 1-38 and 44-51 are rejected under 35 U.S.C. 101, as allegedly being directed to non-statutory subject matter. Applicant respectfully disagrees.

Claim 28, for example, sets forth:

28. (Currently Amended) An article comprising a tangible machine readable medium that stores a program, said program being executable by a machine to perform a method comprising:
- shuffling first set of packed data from a first source based on a first set of masks to produce a first set of shuffled data, said first set of masks to include a first plurality of control entries, wherein at least one of said first plurality of control entries is to set a first data element position in said first set of shuffled data to zero;
 - shuffling second packed data from a second source based on a second set of masks to produce a second set of shuffled data, said second set of masks include a second plurality of control entries, wherein at least one of said second plurality of control entries is to set a second data element position in said second set of shuffled data to zero, said second data element position different from said first data element position; and
 - merging said first set of shuffled data and said second set of shuffled data together to form a packed data resultant.

An analysis of the instant claims must be performed in order to make a determination of whether the subject matter is statutory. Such analysis should correlate each claim element with corresponding structures, materials or acts set forth in the specification.

The Federal Circuit makes it clear that the ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention. "The person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Phillips v. AWH Corp.*, 415 F.3d at 1313.

Applicant respectfully submits that the claimed shuffling of sets of packed data from a first source based on a first set of masks and from a second source based on a second set of masks to produce, respectively, a first and a second set of shuffled data, and the masks to include control entries to set data element positions in the first and second sets of shuffled data to zero, as set forth in Claim 28 (and also in Claims 1 and 34), would not be treated merely as a program per se by a person of skill in the art in the context of the entire patent.

Claim 44, for example, further sets forth:

44. (Currently Amended) An article comprising a tangible machine readable medium that stores a program, said program being executable by a machine to perform a method comprising:

- loading first data for a first plane and second data for a second plane;
- loading a first control mask having a first shuffle pattern and a second control mask having a second shuffle pattern;

- selecting one of said control masks to operate on said first plane data and another of said control masks to operate on said second plane data, wherein said one control mask is different from said another control mask;

- shuffling a first portion of said first plane data in accordance with said one control mask to generate a first set of shuffle data and a second portion of said second plane data in accordance with said another control mask to generate a second set of shuffled data; and

- merging said first set of shuffled data together with said second set of shuffled data to form a packed data resultant having data from both said first plane and said second plane..

Applicant respectfully submits that the claimed selecting one control mask to operate on a first plane data and another to operate on a second plane data and shuffling a portion of each respective plane data in accordance with the control masks to generate respective sets of shuffle data, as set forth in Claim 44 (and also in Claims 11), would not be treated merely as a program per se by a person of skill in the art in the context of the entire patent.

The instant language when correlated with the corresponding structures and processes set forth in the specification makes it apparent to one of skill in the art that the claimed invention has practical applications in the technical arts, i.e. to order data from

small lookup tables in video and encryption applications, or to interleave planar color data from separate color planes, e.g. red (R) plane, green (G) plane, and blue (B) plane data for display in an RGB format.

In addition, Applicant respectfully submits, that the present application clearly asserts such a practical application in the technical arts.

For example, paragraphs 39 of the specification (emphasis added) asserts that:

Embodiments of the present invention provide a way to implement a packed byte shuffle instruction with a flush to zero capability as an algorithm that makes use of SIMD related hardware. For one embodiment, the algorithm is based on the concept of shuffling data from a particular register or memory location based on the values of a control mask for each data element position. Embodiments of a packed byte shuffle can be used to reduce the number of instructions required in many different applications that rearrange data. A packed byte shuffle instruction can also be used for any application with unaligned loads. Embodiments of this shuffle instruction can be used for filtering to arrange data for efficient multiply-accumulate operations. Similarly, a packed shuffle instruction can be used in video and encryption applications for ordering data and small lookup tables. This instruction can be used to mix data from two or more registers. Thus embodiments of a packed shuffle with a flush to zero capability algorithm in accordance with the present invention can be implemented in a processor to support SIMD operations efficiently without seriously compromising overall performance.

Paragraphs 132 of the specification (emphasis added) asserts that:

FIGS. 15A-K illustrates an algorithm, for shuffling data between multiple registers to generate interleaved data. This is an example of an application that interleaves planar color data. Image data is often processed in separate color planes and then these planes are later interleaved for display. The algorithm described below demonstrates interleaving for red plane, green plane, and blue plane data as used by image formats such as bitmaps. Numerous color spaces and interleave patterns are possible. As such, this approach can easily be extended to other color spaces and formats. This example implements an often used image processing data format process wherein red (R) plane, green (G) plane, and blue (B) plane data are interleaved into an RGB format. This example demonstrates how the flush to zero capability in accordance to the present invention significantly reduces memory accesses.

Thus the specification makes it readily apparent to one of skill in the art that the claimed invention has a practical application in the technical arts.

The Supreme Court held that the focus in any statutory subject matter analysis be on the claim as a whole, stating "When a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (e.g., transforming or reducing an article to a different state or thing, then the claim satisfies the requirements of § 101." *In re Alappat*, 33 F.3d 1526, 1543 (Fed. Cir. 1994) (quoting *Diehr*, 450 U.S. at 192, 209 USPQ at 10).

This notion is sometimes phrased in terms of requiring a transformation or reduction of 'subject matter.' In *Schrader*, the phrase 'subject matter' was determined not to be limited to tangible articles or objects, but includes intangible subject matter, such as data or signals, representative of or constituting physical activity or objects. *Schrader*, 22 F.3d at 295, 30 USPQ2D (BNA) at 1459.

Thus Applicant respectfully submits that Claims 1-29 are directed to statutory subject matter.

CONCLUSION


Applicants respectfully submit the amended specification, the amended drawings, and the present claims for allowance. If the Examiner believes a telephone conference would expedite or assist in the allowance of the present application, the Examiner is invited to call Lawrence Mennemeier at (408) 765-2194.

Authorization is hereby given to charge our Deposit Account No. 02-2666 for any charges that may be due.

Respectfully submitted,

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